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In Defense of Real Cartesian Motion: A Reply to Lennon

On Thomas Lennon's (2007) "Eleatic" reading of Descartes, the Cartesian world is in reality motionless, its motions conceived as mere phenomenal appearances. Lennon is aware that this radical reading appears to be at odds with various Cartesian texts that seemingly describe real motions, and accordingly he reinterprets these texts in such a way as to render them compatible with his reading.

This reply to Lennon considers many further Cartesian texts that cannot be "reinterpreted" along the lines Lennon describes, with the ultimate aim of showing that the phenomenalist is committed to dividing Cartesian texts into passages dealing with reality and with appearance. I argue there are good reasons not to read Descartes in this way, and we should take Cartesian motion at face value: to be real.

Key words: Descartes, phenomenalism about motion, material bodies, moving space

1 Introduction

Thomas Lennon has argued for an innovative "Eleatic" reading of Descartes. At its heart is the thesis that Descartes is a phenomenalist about motions; with this in place, Lennon goes on to argue that Descartes is also a phenomenalist about individual material bodies. Conjuring up the ghosts of Eleatics such as Parmenides, Lennon describes a Cartesian material world in which moving, individual bodies are appearances, not realities. This paper takes issue with Lennon's thesis that Cartesian motion is phenomenal.

Section 2 of the paper details Lennon's Eleatic reading, setting out his arguments and placing them in scholarly context. Lennon is aware that his reading is radical, and he considers various passages in Descartes that appear to be inconsistent with it. In response to texts seemingly describing moving bodies, Lennon argues that they merely refer to the *mobility* of matter. This move is similar to that made by Alice Sowaal, who offers a partially phenomenalist reading of Cartesian motions.

Section 3 demonstrates that there are a great many additional Cartesian texts that cannot be reconciled with the Eleatic reading in the way that Lennon describes, with the ultimate aim of showing that the phenomenalist is committed to carving up Descartes's system into texts dealing with reality and texts dealing with appearance. Against this, I argue—drawing in part on these ‘problematic’ Cartesian texts—that we have good reasons to deny that Descartes carves up his system in this way. The costs of reading Descartes as a phenomenalist about motion outweigh the benefits, even though, as we will see, the realist must accept the seemingly strange view that the parts of Cartesian space move. Section 4 concludes.

2 Lennon's Eleatic Descartes

Lennon finds commonalities between the metaphysics of Parmenides and Descartes. Parmenides conceives the world as a plenum—a matter-filled space—in which nothing really moves. Descartes conceives the material world as a plenum and Lennon argues that Descartes *also* takes motions to be phenomenal. By “phenomenal,” Lennon means “mind-dependent.”¹ Phenomenalism about motions is not alien to seventeenth century metaphysics. For example, Leibniz variously describes motion as a “relative phenomena” and as “ideal.”² Although the best way of understanding these remarks is debated³, crucially Leibniz *makes* such remarks. In contrast, Descartes does not: nowhere in the Cartesian corpus is motion described as phenomenal, or ideal.

Nonetheless, Lennon argues that phenomenalism about motions is implicit in Descartes. Lennon is driven to this view via a consideration of various Cartesian positions, and he puts forward two arguments in support of it.

The first argument is “physical.” In a plenum, a body can only move when another body moves to make way for it. In Descartes's system, bodies move in shuffling rings around centers, known as vortices⁴; they are akin to whirlwinds or whirlpools. Lennon raises several physical problems for vortex theory, arguing that it “seems to undo any notion of natural causation” because all the bodies in a vortex must move simultaneously or not all; hence, the

motion of none can be prior to “and thus qualify as” the cause of the motion of some other. Further, no constituent body can be the cause of the vortex’s motion, as every body has the same force at the same time.⁵

Lennon’s second argument is “metaphysical.” The argument comprises three premises that are defended at length, and I merely give their bones here.

Understanding the first premise requires some background. For Descartes, a body’s “internal place” is the space it takes up in length, breadth and depth. A body’s “external place” is the surface immediately surrounding what is in the place.⁶ On Descartes’s strict definition of motion, “motion is the transfer of . . . one body, from the vicinity of the other bodies which are in immediate contact with it, and which are regarded as being at rest, to the vicinity of other bodies.”⁷ Lennon argues that this definition implicitly “connects” motion with external place.⁸ The idea is that when a body moves—transfers away from its vicinity of neighboring bodies—its external place changes.

Lennon’s second premise argues that when a body changes external place it also changes internal place.⁹ Lennon holds that Descartes individuates—i.e. differentiates—material bodies by motion: “a body is as much of matter as moves together.”¹⁰ This is based on Descartes’s statement, “By ‘one body’ or ‘one piece of matter’ I mean whatever is transferred at a given time.”¹¹ Motion is change in external place, so bodies are individuated by changing external place. As Lennon puts it, the “relations of situation”—the relations between a body and those around it, its external place—are “precisely what make possible the individuation of bodies.”¹² For Descartes, a body is its internal place: “There is no real distinction between space, or internal place, and the corporeal substance said to be contained in it; the only difference lies in the way in which we are accustomed to conceive of them.”¹³ So motion—change in external place—individuates internal places. As Lennon reads Descartes, internal place has been defined such that external place changes only when body changes internal place.

Lennon’s third premise argues that a body cannot change its internal place.¹⁴ There is only a conceptual distinction between a body and its place. A conceptual distinction holds between a substance and some attribute of that substance without which the substance is

unintelligible; it is opposed to a “real distinction” which exists only between two or more substances.¹⁵ As there is no real distinction between material substance and space, the Cartesian world is a plenum. A body cannot change its internal place because it is *really* identical to its place; a body cannot move away from its place any more than Hesperus can move away from Phosphorus.

As there is no motion without change in external place, and there is no change in external place without change in internal place—which is impossible—Lennon concludes that real motion is impossible. No real motions entails no way of individuating material bodies. For Lennon, Descartes is akin to Parmenides.

Lennon is aware that his Eleatic reading appears to conflict with Cartesian texts that *prima facie* assert a plurality of moving, mind-independent bodies, and he spends time reinterpreting those texts so as to bring them in line with his Eleatic reading. I will discuss the one text Lennon provides on motion. This is *Principles* II.23, which is headed, “All the variety in matter, all the diversity of its forms, depends on motion.” The passage explains that all the matter existing in the universe is the same, and all the properties which we perceive in it “are reducible to its divisibility and consequent mobility” in respect of its parts.¹⁶ Lennon’s response to this text is as follows:

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This [the heading] sounds as if matter must actually be in motion. But the text of the article asserts, not the actual motion of matter and its division into parts, but only its *mobility* and *divisibility*, to which all the properties that we perceive in it are reducible.¹⁷

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Lennon is arguing that, in reality, the nature of extended substance is mobile and divisible. This nature gives rise to the phenomenal appearance of moving, individual bodies. Extended substance is mobile and divisible but it never actually moves or is divided.

Sowaal takes a similar approach to Lennon. These scholars interpret Descartes differently but they agree to some extent that motions and individual bodies are phenomenal.

For Lennon, motion is fully phenomenal; in contrast, Sowaal holds that it is partly phenomenal.¹⁸ In the context of considering a possible objection to her view, Sowaal also discusses *Principles* II.23:

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[N]ote that when Descartes names the tools he will use to describe phenomena, he refers to modalities: to divisibility, not to actual divisions; to mobility, not to actual motions . . .

Therefore, the explanations that Descartes seeks in his physics need not be in terms of ‘facts’ about bodies, but in terms of the *divisibility* and *mobility* of extended substance.¹⁹

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Lennon and Sowaal agree that this text can be read as describing the mobility of matter, not actual motions.

Lennon’s Eleatic reading advances many controversial theses. The thesis that Cartesian matter is individuated by motion is commonplace but not undisputed.²⁰ The thesis that Descartes is a monist about material substance is shared by some scholars but is widely disputed.²¹ The thesis that material bodies are phenomenal is extremely controversial, though it is shared by Sowaal. The unique aspect of Lennon’s interpretation is the fully phenomenalist reading of Cartesian motions. Radical though the Eleatic reading is, Lennon’s underlying strategy—working through what he takes to be the implications of Descartes’s natural philosophy—is sound, and the result is a rich and creative interpretation of Descartes.

3 Reading Cartesian Texts on Motions

In this section I show that there are many Cartesian texts not amenable to reinterpretation in the way that Lennon describes, with the aim of drawing out an implicit phenomenalist commitment that—I will argue—is problematic. Although I do not provide a

premise-by-premise critique of the arguments utilised by Lennon’s Eleatic reading, along the way I will discuss various responses to them.

3.1 Additional Cartesian texts that are “problematic” for the Eleatic reading

Historians of philosophy are frequently interested in whether the views found in some historical figure are philosophically consistent, in the sense that they can be held together without contradiction (obvious or otherwise). For example, substance dualism is consistent with theism; in contrast, substance dualism is inconsistent with substance monism. Historians often employ a ‘principle of charity’: on finding a view in some text that is *prima facie* inconsistent with another view in the same text, they attempt to reinterpret one or both views to render them consistent.²²

When Lennon describes passages such as *Principles* II.23 as “problematic,” he means that they appear to be inconsistent with the Eleatic reading; by reinterpreting these passages, Lennon is attempting to render them consistent. Lennon’s Eleatic reading is primarily grounded in the *Principles* and, when dealing with a text as carefully constructed as this, I agree that we should attempt to interpret Descartes’s views in a way that renders them consistent. However, against Lennon, I argue that the *Principles* and many other texts contain passages that cannot be “reinterpreted” in the way he describes. I have selected three sets of passages—on vortices, corpuscularianism, and mind-body interaction—that discuss motions explicitly and at length. The passages on vortex theory are particularly important because they show how seriously Descartes takes it, undermining Lennon’s physical argument.

Descartes’s vortex theory has received relatively little scholarly attention.²³ As Pasnau puts it, the English Descartes is “sanitized” of his vortices.²⁴ The current major English translation of Descartes’s *Principles*—CSM I—does not translate large chunks of Parts Three and Four, those largely concerned with vortex theory. And yet, vortex theory underlies major parts of Descartes’s work.

Vortices power Descartes's cosmogony, his account of how the universe arrived at its current state. *The World* explains how a real, solid body of matter could become the familiar visible world:

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Let us add that this matter may be divided into as many parts having as many shapes as we can imagine, and that each of the parts is capable of taking on as many motions as we can conceive. Let us suppose, moreover, that God really divides it into many such parts, some larger and some smaller, some of one shape and some of another . . . From the first instant of their creation, he causes some to start moving in one direction and others in another.²⁵

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The first sentence in this passage is compatible with Lennon's interpretation that matter is mobile but not in motion; however, the second sentence is not. Having explained that the parts are capable of motion, Descartes asks us to suppose *moreover*—translated from *Et supposons de plus*—that matter really *is* divided, and that at creation God causes the parts of matter to move.²⁶ A little later, *The World* describes how flames have moving parts. In this context, Descartes writes:

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I believe that countless different motions go on perpetually in the world . . . the air is forever agitated by the winds, that the sea is never at rest . . . there is nothing anywhere which is not changing. From this I know clearly that a flame is not the only thing in which there are a number of minute parts in ceaseless motion, but that every other body has these parts.²⁷

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Again, this passage is not open to reinterpretation along Lennon's lines.

Part Two of the *Principles* expands on Descartes's cosmogony:

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God imparted various motions to the parts of matter when he first created them, and he now preserves all this matter in the same way, and by the same process by which he originally created it . . . this fact alone makes it most reasonable to think that God likewise always preserves the same quantity of motion in matter.²⁸

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I will say more on this passage below. Part Three details the three kinds of matter or “elements” that make up the visible world. After creation, these elements formed celestial bodies. For example, “they moved (*motas*) individually and separately about their own centers, so as to form a fluid body such as we take the heavens to be.”²⁹

Vortices underlie the cosmology found in Part Three of the *Principles*. Here is Descartes on planetary movements:

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[S]uppose that the whole of the celestial matter in which the planets are located turns continuously like a vortex with the sun at its centre. Further, let us suppose that the parts of the vortex which are nearer the sun move more swiftly than the more distant parts . . . This single supposition enables us to understand all the observed movements of the planets.³⁰

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This supposition allows Descartes to explain the speeds of planetary revolutions: Mercury moves faster than Mars because it is closer to the centre of the vortex.³¹ Strictly, Descartes argues that the Earth does not move because, although it orbits the Sun, it does not move from the pocket of celestial material that encloses it.³² Galileo was persecuted for holding that the Earth moved and Descartes wished to avoid this; unsurprisingly, scholars debate whether Descartes’s denial that the Earth moves is a smokescreen for Copernicanism.³³ If motions were phenomenal, this would provide Descartes with another way of denying Earthly movement; it is telling that there is no suggestion of this. Descartes’s cosmology also uses

vortical motion to explain the movements of satellites around planets, sunspots, comets, and the lifecycle of stars.³⁴

The phenomenalist could disregard Descartes's writings on cosmogony and cosmology on the grounds that (as above) Descartes describes these theories as "suppositions." Even *if* we disregard them—and, below, I will argue we should not—Cartesian physics offers many more theories involving vortical motion that are not so described. For example, Part Three of the *Principles* explains light propagation as the force by which elements "attempt to move away" from their centers.³⁵ Vortices play key roles in many further theories—including gravity, tides, and magnetism³⁶—unifying Descartes's physics at a deep level.

Given how problematic these texts on vortices would appear to be for the Eleatic reading, why does Lennon not consider them? I suspect the answer lies in Lennon's physical argument, the presentation of which suggests that Lennon takes vortices to face insuperable problems. This suspicion is supported by a footnote Lennon provides later³⁷, referencing Kenny's view that motion is physically impossible on the Cartesian system.³⁸ If Lennon also holds this view, it would explain why he does not consider texts concerning vortices: they face such insuperable difficulties that Lennon cannot conceive that Descartes intends them literally.

In response to such a position, there are two points to be made. First, while Cartesian vortex theory faces problems, they may not be insuperable. As Lennon himself notes³⁹, one solution to the difficulties would be to adopt an occasionalist reading of Descartes, on which force is provided by God. Natural causation could take place in a vortex if we read Descartes as allowing *simultaneous* causes and effects, on which the motion of one body can be simultaneous with the motion of another yet qualify as the cause of it.⁴⁰ Further solutions present themselves depending on how one understands Cartesian force.⁴¹

Second, even *if* the physical difficulties facing Cartesian vortex theory are insuperable, this is not obviously apparent. As Aiton demonstrates⁴², Cartesian vortex theory rivaled Newtonian physics for over a century. Vortex theory is central to Descartes's natural philosophy, and there are no indications that Descartes perceived insuperable difficulties in it.

Natural philosophers have often held theories that are later discovered to face insuperable difficulties, such as geocentrism. However, the fact we now know geocentrism to be mistaken does not by itself provide reason to refrain from attributing it to Aristotle or Tycho. Similarly, even if vortex theory is mistaken, that does not by itself provide reason to refrain from attributing it to Descartes.⁴³

The second set of texts that are seemingly incompatible with the Eleatic reading concern Descartes's corpuscularianism, a key part of which is the attempt to reduce all the properties of material bodies to a small restricted set of properties, including size, shape and motion. These are known as "primary qualities," as opposed to "secondary qualities"; although these terms are found in the likes of Locke rather than Descartes, it is widely accepted that a similar distinction is in play.⁴⁴

In *The World* Descartes argues that the qualities called "heat," "cold," "moisture" and "dryness"—and "all the others as well"—can be explained by supposing nothing in their matter "other than the motion, size, shape and arrangement of its parts."⁴⁵ Shortly after, whilst setting out his cosmogony, Descartes asks us to imagine of that solid body of matter that it lacks the qualities of being hot or cold, dry or moist, and of having any taste, smell, sound or color. After God causes the parts of this body of matter to move, the chaos will arrange itself into good order, "a world in which we shall be able to see not only light but also all the other things... which appear in the real world."⁴⁶ The implication is that it is only *after* God has introduced real motion into matter that light—and all the other qualities—emerge.

A similar thesis can be found in Part Four of the *Principles*. In the context of describing the workings of our senses—touch, taste, smell, hearing and sight—Descartes writes:

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I have given an account of the various sizes, shapes and motions which are to be found in all bodies; and apart from these the only things which we perceive by our senses as being located outside us are light, color, smell, taste, sound and tactile qualities. And I have just

demonstrated that these are nothing else in the objects... but certain dispositions depending on size, shape and motion.⁴⁷

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Again, Descartes is writing that secondary qualities depend on the primary qualities of bodies: sizes, shapes and *motions*. Lennon argues that the experienced qualities of bodies such as color are phenomenal⁴⁸ but he does not explain how we should reinterpret texts such as these to bring them in line with the Eleatic reading.

The third set of passages concern Descartes's account of mind-body interaction. Motion is involved in both directions.

In Part Four of the *Principles*⁴⁹, Descartes claims that the body communicates sensory perceptions to the mind through movement. Descartes holds that the human soul has its "seat" in the brain, and its sensory awareness comes about by means of thread-like nerves which stretch from the brain to the limbs; hardly any part of the body can be touched without producing movement in nearby nerve-ends. "This movement is then transmitted to the other ends of the nerves which are all grouped together in the brain around the seat of the soul... [the soul] is affected in various ways, according to the various different sorts of movements."⁵⁰ The states of mind which are the "immediate result of these movements" are sensory perceptions.⁵¹ For example, in describing sight, Descartes explains that the extremities of our optic nerves are moved by elemental globules.⁵² As Cottingham puts it, Descartes appears to hold that in sense perception the "motions of matter in the external world impinge on the body and set up further motions there."⁵³

The mind also interacts with the body through movement. For example, in a 1643 letter to Elisabeth, Descartes claims, "That the mind . . . can set the body in motion is something which is shown to us . . . by the surest and plainest everyday experience."⁵⁴ The *Meditations* writes that the mind directs the animal spirits flowing from the heart through the brain into the muscles and "determines them to certain motions."⁵⁵ Machamer and McGuire detail the "tight, substantial mind-body connection" at length, explaining how the soul can

produce “complex movements” in the body.⁵⁶ However this connection is best understood, motions would appear to be key.

All of these passages seem to be inconsistent with the Eleatic reading. They explicitly describe the movements of material bodies, and as such they cannot be reinterpreted as merely describing the mobility of matter.

3.2 Dividing Descartes’s texts: on appearance and on reality

In the face of such texts, there is another reply open to the phenomenalist. Where taken from the *Principles*, the passages above are found in Parts Two, Three and Four. Descartes lays out his fundamental metaphysics in Part One, whilst these latter Parts largely concern Descartes’s natural philosophy. The phenomenalist could carve up the *Principles* and argue that, in Part One, Descartes is discussing metaphysical realities; by the later Parts, Descartes has shifted the discussion ‘up’ to the level of appearances. This approach could be extended to *The World* and all the other texts that discuss real motions. On this reading, Descartes is offering us a science of appearances. His natural philosophy is explaining phenomena using phenomena: motions.

Short of denying that these texts do assert real motions—which would be hugely implausible—the phenomenalist is committed to dividing up Descartes’s texts in this way.⁵⁷ I argue this commitment is unpalatable, for two reasons.

The first reason is grounded in Part One of the *Principles*, which claims that God has given us a faculty of perception which cannot incline to falsehood, so if we clearly and distinctly perceive something we can know it to be true.⁵⁸ We clearly and distinctly perceive immaterial and material substance.⁵⁹ Descartes’s faith in matter provides a stark contrast with card-carrying phenomenologists such as Leibniz.

Towards the end of Part One, Descartes writes that the mind perceives “sizes, shapes and motions”⁶⁰ which are presented as modes of things existing outside of thought.⁶¹ The opening of Part Two continues:

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[A]s a result of sensory stimulation we have a clear and distinct perception of, some kind of matter, which is extended in length, breadth and depth, and has various differently shaped *and variously moving parts* which give rise to our various sensations of colors, smells, pain and so on. And if God were himself immediately producing in our mind the idea of such extended matter, or even if he were causing the idea to be produced by something which lacked extension, shape and motion, there would be no way of avoiding the conclusion that he should be regarded as a deceiver (my emphasis).⁶²

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This passage appears to straightforwardly claim that via sensory perception we clearly and distinctly perceive a kind of matter which has variously moving parts. If God produced an idea of moving parts in us, when in reality there were none, then God *per impossibile* would be a deceiver. In reality, matter has moving parts.

Unfortunately for the realist, matters are not quite so straightforward. The original text reads:

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*Sed quia sentimus, sive potius a sensu impulsī clare ac distincte percipimus, materiam quandam extensam in longum, latum & profundum, cujus variae partes variis figuris praeditae sunt, ac variis motibus cientur, ac etiam efficiunt ut varios sensus habeamus colorum, odorum, doloris, &c.*⁶³

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On the CSM translation, we clearly and distinctly perceive matter which is extended *and* has variously shaped and moving parts. However, the Latin uses the relative pronoun *cujus* rather than a conjunction⁶⁴, enabling an alternative translation: “. . . matter which is extended in length, breadth and depth, *of which* various parts are arranged in various figures, are moved

in various motions, and bring about that we have various sensations . . . ”⁶⁵ The phenomenalist could argue that we only have a clear and distinct perception of extended matter; the further claim that matter has shaped and moving parts is not a perception but is, say, an inference.

Although there is wiggle room in the translation, it is not overly helpful to the phenomenalist. This is because, on the proposed phenomenalist reading of this passage, Descartes is discussing reality (extended matter) *and* appearance (motions) in the same breath. If Descartes were distinguishing between levels of reality and appearances, a distinction reflected in the ordering of the Parts of the *Principles*, it would seem extremely unlikely that he would muddle together his metaphysics of reality and appearance in this way. As Descartes’s remarks on the clear and distinct perception of material substance must be taken literally—lest God be a deceiver—this gives us a strong reason to take this remark on motions literally too.

The second reason to deny that Descartes’s natural philosophy is offering a science of appearances is based on a ‘cost-benefit’ analysis. Lennon states that Descartes is not merely committed to phenomenalism “but actually holds it.”⁶⁶ Lennon’s reasoning appears to be that, because realism about motion is so problematic given Descartes’s physical and metaphysical principles, Descartes must actually be a phenomenalist about motion. Similarly, having discussed problems with Descartes’s account of motion, Sowaal explains that whilst most commentators suppose that Descartes is a realist about bodies “only to find his ontology to be riddled with problems,” commentators such as herself and Lennon have taken those problems seriously enough to develop idealist interpretations of Descartes.⁶⁷

Lennon and Sowaal are arguing that the benefits of interpreting Cartesian motion phenomenally—avoiding the physical and ontological problems entailed by the realist reading—outweigh the costs. Against this, I argue that a phenomenological reading entails a higher cost than has been appreciated: it breaks down the consistency of the *Principles*. To make this point, we will return to Descartes’s cosmogony and philosophy of mind.

Above, I claimed that although Descartes describes his cosmogony as a supposition, we should not disregard it. This is because it plays several roles in Descartes’s system. For

example, Descartes argues that even though God created the world with all its current perfection (as in *Genesis*) it is better for us to understand the nature of the visible world—including men, plants, stars, and the Earth—by considering how it might have developed.⁶⁸ As Schuster and Brody have shown, Descartes’s cosmogony informs his physics, biology and physiology.⁶⁹ Further, Descartes’s cosmogony provides another place for divine action in his system. Part One of the *Principles* explains that the same cause which originally produced us continually “keeps us” in existence.⁷⁰ As we saw above, Part Two explains that just as God preserves matter, God “likewise” preserves the same quantity of motion in matter. How best to understand this conservation of motion is disputed⁷¹ but again Descartes links motion and change, leading him to write: “The very fact that creation is in a continual state of change is thus evidence of the immutability of God.”⁷² Continual change in the created world is grounded in God’s *unchanging*, continual preservation of motion since creation. Descartes’s views on the divine conservation of matter and motion are important because they provide God with immanent and indispensable roles in what would otherwise appear to be a decidedly mechanist universe. Matter is uncontroversially real for Descartes; as such, his claim that God “likewise” preserves matter *and* motion suggests that both are real. To claim otherwise diminishes the consistency of the text.

Cartesian mind-body interaction is, of course, another thread that runs throughout the *Principles*. Part One states:

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[W]e also experience within ourselves certain other things which . . . arise, as will be made clear later on, in the appropriate place, from the close and intimate union of our mind with the body. This list includes, first, appetites like hunger and thirst; secondly, the emotions or passions of the mind which do not consist of thought alone . . . and finally, all the sensations, such as those of pain, pleasure, light, colors, smells.⁷³

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A footnote explains that the “appropriate place” is Part Four, referencing articles (that have been partially described above) such as the mechanisms of sensory perception. On a science of appearances, if motions are phenomenal, then anything grounded on motions—whether it be planetary orbits or light propagation—is phenomenal too. The problem for the phenomenalist is that Descartes’s mind-body union is bound up with mind-body interaction, and *this* is grounded on motions. This renders mind-body interaction hard to understand. If motions are phenomenal, how are we to understand the mechanisms by which the mind affects the body, or how the mind feels bodily pain? If mind-body interaction is phenomenal then it would seem that so too is the mind-body union, and the appetites, emotions and sensations that arise from it. This is difficult to square with Descartes’s claim that the mind-body union is close and intimate (*arcta & intima mentis nostrae cum corpore unione*). The phenomenalist must reinterpret—and likely downplay—this intimacy, breaking down the consistency of the *Principles* between Parts One and Four.

Against Lennon and Sowaal, I argue that these concerns over consistency upset the cost-benefit analysis, suggesting that a fully realist reading of Cartesian motion is less costly than a phenomenalist one. However, there is an important cost to accepting the realist reading that has not yet been taken into account.

This cost is rejecting a very natural assumption: the parts of space cannot move. Hartz neatly articulates it: “Cartesian bodies, since they are regions of space, must remain locked forever in their positions in the ‘plenum space’.”⁷⁴ I describe this assumption as ‘natural’ because it is difficult to imagine how parts of space *could* move; it is common to conceive space as a kind of fixed, immobile void, even if every part of space is filled with body. And yet, if one holds the third premise of Lennon’s metaphysical argument—a Cartesian body cannot change its internal place because there is no real distinction between a material body, its internal place and space—then accepting realism about Cartesian motion would appear to entail that the parts of space move. I do accept this premise and, natural though it may be, I reject the assumption that the parts of space cannot move.⁷⁵

Newton’s *De Gravitatione* provides us with a reason to deny that the parts of space can move (a view that, interestingly, he attributes to Descartes):

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The parts of space are motionless. If they moved, it would have to be said either that the motion of each part is a translation from the vicinity of other contiguous parts, as Descartes defined the motion of bodies, and it has been sufficiently demonstrated that this is absurd.⁷⁶

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But this reason would not find traction with Descartes. For Newton, it is absurd to hold that the parts of space move because Newton holds an ‘absolute’ account of motion, on which bodies move against a backdrop of absolute space, rather than relative to each other. As Descartes is not an absolutist, this is no reason for *him* to hold that the parts of space are motionless. As Huggett observes, “It is not clear how this argument secures Newton against the motion of the parts of space *relative* to one another.”⁷⁷ Whilst it is strange to allow that the parts of Cartesian space move, it is perfectly possible.

A way of making the thesis a little less strange is suggested in an illuminating discussion by Woolhouse:

<ext>

It is sometimes said that Descartes’s ‘spatialises body’, or says that ‘matter is space’. What seems to lie behind such assertions is the idea that Descartes begins with the picture of space as something independent of body, adds to this his ‘thin’ conception of body as mere extension, and so ends up with bodies as nothing other than ‘regions of space’. It is, of course, part of that picture of space that its parts or regions logically cannot move, and so the problem is raised for Descartes how body can move . . . [However] Descartes does quite the contrary . . . he *corporealizes* space.⁷⁸

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Descartes *starts* from material body, rather than from any kind of immobile void space. The motion of material bodies is familiar, and so the idea that their internal places or spaces can move turns out to be not quite so strange after all.

In fact, this thesis can be found in another early modern thinker: Margaret Cavendish. In her *Philosophical Letters*, Cavendish writes the following.

<ext>

I believe not that there is any more place than body; as for example, Water being mix'd with Earth, the water doth not take the Earths place, but as their parts intermix, so do their places . . . Say a man travels a hundred miles . . . this man has not been in a hundred thousand places, for he never had any other place but his own.⁷⁹

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For Cavendish—as with Descartes—there is no place in addition to body. Further, when bodies move, they take their places with them. Similarly, I argue that for Descartes, when a body moves it takes its internal place *and* its space with it.

Rejecting the assumption that the parts of space are immobile⁸⁰ sets us on the path to dismantling Lennon's metaphysical argument. Against the second premise, there *is* a way that a Cartesian body can change its external place without changing its internal place: when a body changes its external place—moving away from its current vicinity of bodies—it takes its internal place with it. Now, this is not quite enough to dismantle Lennon's argument, for he individuates bodies by external place; consequently, a body that changes its external place is no longer the same body. Additionally then, one must pull apart the connection Lennon draws between motion, external place, and the individuation of bodies. There are several ways to do this. For example, one could argue that Descartes's strict definition of motion does not connect to external place; Descartes certainly does not draw this connection explicitly. Alternatively, one could reject the assumption that bodies are individuated by motion at all. As explained above, several scholars have offered alternative accounts; for example, Normore has recently argued that Descartes takes the individuation of minds to be

primitive, and the same goes for bodies.⁸¹ The picture we end up with is akin to Cavendish's: bodies move and take their (internal) places with them.

To summarize, the phenomenalist is committed to carving up Descartes's texts into those dealing with reality and those dealing with appearance, but there are good reasons not to: Descartes writes that via sensory perception we clearly and distinctly perceive motions, and the costs of endorsing phenomenalism are outweighed by the benefits. Although the realist is committed to the *prima facie* strange thesis that the parts of the space can move, this cost is preferable, especially once one realizes that it is *really* just bodies that are moving.

4 Final Thoughts

Lennon has done an admirable job of arguing for phenomenalism about motions in Descartes. However, in the absence of any textual evidence explicitly supporting this reading, Lennon's claim that the view is implicit in Descartes is an uphill struggle. Lennon's existing strategies cannot accommodate many Cartesian texts concerning motion, and there are good reasons to believe that these texts are discussing realities, not appearances.⁸²

Bibliography and Abbreviations

Abbreviations

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- MM *The Principles of Philosophy*. Translated by Rodger Valentine Miller and Reese P. Miller. Dordrecht: D. Reidel, 1983.

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¹ Lennon, “The Eleatic Descartes,” 29. [Eleatic Descartes]

² Leibniz, *Philosophical Papers and Letters*, 445–6; 583.

³ See Hartz, “Leibniz’s Phenomenalisms.”

⁴ CSM I.257/AT VIIIA.101.

⁵ Lennon, “Eleatic Descartes,” 31.

⁶ CSM I.229/AT VIIIA.48.

⁷ CSM I.233/AT VIIIA.53.

⁸ Lennon, “Eleatic Descartes,” 32–3.

⁹ Lennon, “Eleatic Descartes,” 37.

¹⁰ Lennon, “Eleatic Descartes,” 30.

¹¹ CSM I.233/AT VIIIA.53–4.

¹² Lennon, *The Battle of the Gods and Giants: the legacies of Descartes and Gassendi, 1655–1715*, 200. [*The Battle*]

¹³ CSM I.227/AT VIIIA.45.

¹⁴ Lennon, “Eleatic Descartes,” 37.

¹⁵ CSM I.213–4/AT VIIIA.28–31.

¹⁶ CSM I.232/AT VIIIA.52.

¹⁷ Lennon, “Eleatic Descartes,” 39.

¹⁸ Sowaal provides a brief comparison of their accounts; “Cartesian Bodies,” 224.

¹⁹ Sowaal, “Cartesian Bodies,” 237–8.

²⁰ Scholars who agree that bodies are individuated by motion include Wilson, *Descartes*; Cottingham, *Descartes*, 87; Hartz, “Leibniz on Why Descartes’s Metaphysic of Body is Necessarily False,” 28 [Leibniz on Descartes]; Garber, “Descartes’s Physics,” 303; and Secada, *Cartesian Metaphysics*, 244. Scholars who disagree include Sowaal “Cartesian Bodies”; Normore, “Descartes and the Metaphysics of Extension,” 280 [Metaphysics of Extension]; and Pasnau, *Metaphysical Themes 1274–1671*, 153; c.f. 686 [Metaphysical Themes].

²¹ Scholars who read Descartes as a pluralist include Kenny, *Descartes*, 214–5; Wilson, *Descartes*, 88; Garber, *Descartes’s Metaphysical Physics*, 181; and Skirry, *Descartes and the Metaphysics of Human Nature*, 70. Scholars who disagree include Gueroult, *Descartes’s Philosophy Interpreted according to the Order of Reasons*, 297–8; Cottingham, *Descartes*, 84; Grosholz . “Descartes and the Individuation of Physical Objects”; Sowaal “Cartesian Bodies”; and Secada, *Cartesian Metaphysics*, 242–3.

²² Even Melamed’s recent critique of charitable interpretation allows that one legitimate application is consistency within the same text; see “Charitable Interpretations and the Political Domestication of Spinoza, or, Benedict in the Land of the Secular Imagination,” 275.

²³ Literature includes Aiton, *Vortex Theory of Planetary Motion* [*Vortex Theory*]; discussions sprinkled through Garber “Descartes’s Physics,” and *Descartes’s Metaphysical Physics*; Gaukroger, *Descartes’s System of Natural Philosophy*, 150–160 [*Descartes’s System*]; Dear “Circular Argument: Descartes’s Vortices and Their Crafting

as Explanations of Gravity,” [Circular Argument]; Schuster, “‘Waterworld’: Descartes’s Vortical Celestial Mechanics,” and *Descartes-Agonistes: Physico-mathematics, Method & Corpuscular-Mechanism 1618–3.*, 453–524 [*Descartes-Agonistes*]; and Schuster and Brody, “Descartes and Sunspots: Matters of Fact and Systematizing Strategies in the *Principia Philosophiae*.” [Descartes and Sunspots]

²⁴ *Metaphysical Themes*, 127.

²⁵ CSM I.91/AT XI.34.

²⁶ *dés le premier instant qu’elles font créées, les unes commencent à se mouvoir d’un costé ...*

²⁷ *Je considere qu’il y a une infinité de divers mouvemens, qui durent perpetuellement dans le Monde ...* CSM I.83–5/AT XI.7–11.

²⁸ *quod Deus diversimode moverit partes materiae, cum primum illas creavit, jamque totam istam materiam conservet eodem plane modo eademque ratione qua prius creavit, eum etiam tantundem motus in ipsa semper conservare.* CSM I.240/AT VIIIA.62.

²⁹ CSM I.257/AT VIIIA.101.

³⁰ *... in modum cujusdam vorticis, in cujus centro est Sol, assidue gyrare, ac ejus partes Soli viciniore celerius moveri quam remotiores ...* CSM I.253/AT VIIIA.92.

³¹ MM 97/AT VIIIA.92.

³² CSM I.252/AT VIIIA.90.

³³ Descartes began readying to publish *The World*—which discusses Earthly movement—in 1633 but, on hearing of Galileo’s persecution, suppressed it. On interpreting the *Principles*’ account of Earthly movement, see Garber, *Descartes’s Metaphysical Physics*, 181–88; Gaukroger, *Descartes’s System*, 142–6; Schuster & Brody, “Descartes and Sunspots,” 43–4; and Schuster, *Descartes-Agonistes*, 582–4.

³⁴ See Aiton, *Vortex Theory*; Schuster, *Descartes-Agonistes*; and Schuster & Brody, “Descartes and Sunspots”.

³⁵ MM 112/AT VIIIA.108.

³⁶ See Dear, “Circular Argument”; Schuster, *Descartes-Agonistes*, 453–524; and Schuster & Brody, “Descartes and Sunspots”.

³⁷ “Eleatic Descartes,” 39.

³⁸ Kenny, *Descartes*, 213–5. Similar views are found in Broad, *Leibniz: An Introduction*, 55; and Secada, *Cartesian Metaphysics*, 244–7.

³⁹ “Eleatic Descartes”, 31.

⁴⁰ Machamer & McGuire describe vortical motion as a “paradigmatic example” of Descartes’s commitment simultaneous causes and effects; *Descartes’s Changing Mind*, 80.

⁴¹ For example, Gueroult locates forces in bodies yet provides criteria whereby a body’s “own” motion can be distinguished from that of other bodies, specifically discussing vortices; “The Metaphysics and Physics of Force in Descartes,” 204–8.

⁴² *Vortex Theory*.

⁴³ Despite the physical difficulties they perceive, neither Kenny, Broad, nor Secada suggest that Descartes is less than a realist about vortices.

⁴⁴ See Cottingham, “Descartes on Color,” on this relationship between Descartes and Locke.

⁴⁵ CSM I.89/AT XI.25–6.

⁴⁶ CSM I.91/AT XI.33.

⁴⁷ *Atqui exceptis magnitudine, figura & motu, quae qualia sint in unoquoque corpora explicui, nihil extra nos positum sentitur, nisi lumen, color, odor, sapor, sonus, & tactile qualitates; quae nihil aliud esse, vel saltem a nobis non deprehendi quicquam aliud esse in objectis, quam dispositiones quasdam in magnitudine, figura & motu consistentes, hactenus est demonstratum.* CSM I.285/AT VIIIA.323.

⁴⁸ This is of course controversial; many other accounts are available. For example, Cottingham reads Descartes as locating secondary qualities in bodies; redness is “construed as a disposition of the rose (in virtue of the shape, size and motions of its particles) to set up local motions in our nervous system”; “Descartes on Color,” 237–8. Alternatively, Pasnau reads Descartes as holding an equivocal view; *Metaphysical Themes*, 512–8.

⁴⁹ See also the *Treatise on Man*, CSM I.101/AT XI.131–2 and *The Passions of the Soul* CSM I.337/AT XI.346.

⁵⁰ ... *atque earum motus ad alias eorum nervorum extremitates, in cerebro circa sedem animae collectas, transferatur.*

⁵¹ CSM I.280/AT VIIIA.315–6.

⁵² CSM I.283/AT VIIIA.319.

⁵³ “Descartes on Color”, 233.

⁵⁴ CSMK 358/AT V.222. See also Descartes’s 1649 letter to More, CSMK 365/AT V.276; and *The Passions of the Soul*, CSM I.341/AT XI.354–5.

⁵⁵ CSM II.161/AT VII.229.

⁵⁶ *Descartes's Changing Mind*, 221–4.

⁵⁷ Although he does not put it quite this way, Lennon indicates that he would make such a division; *The Battle*, 205.

⁵⁸ CSM I.207/AT VIIIA.21.

⁵⁹ CSM I.211/AT VIIIA.25.

⁶⁰ *Sicque etiam percipiebat magnitudines, figures, motus, & talia.*

⁶¹ CSM I.219/AT VIIIA.35.

⁶² CSM I.223.

⁶³ AT VIIIA.40–1.

⁶⁴ The French edition uses *dont*, also a relative pronoun: *une matiere estenduë en longueur, larger & profondeur, dont les parties ... ont des figures & des moutemens divers ...* AT IX.63.

⁶⁵ The MM 39 translation is closer : ‘matter which is extended in length, breadth, and depth (the diverse parts of which are endowed with various shapes and subject to diverse movements) ...’; my emphasis. However, I cannot account for their parentheses.

⁶⁶ “Eleatic Descartes,” 30.

⁶⁷ “Cartesian Bodies,” 258–9.

⁶⁸ CSM I.256/AT VIIIA.100.

⁶⁹ Schuster and Brody “Descartes and Sunspots” argue that Descartes’s cosmogony directly and indirectly informs his matter theory, cosmology, cosmography, and tidal theory; this contributes to securing the *Principles* as a coherent system. I agree.

⁷⁰ CSM I.200/AT VIIIA.13.

⁷¹ CSM I.243/AT VIIIA.66. Descartes *appears* to hold that as bodies move against one another, they push and transfer their motion to others, such that the overall quantity of motion is preserved. See Garber, *Descartes's Metaphysical Physics*, 180–97.

⁷² *Sicque haec ipsa creaturarum continua mutatio immutabilitatis Dei est argumentum.*

⁷³ CSM I.209/AT VIIIA.23.

⁷⁴ “Leibniz on Descartes,” 30.

⁷⁵ As do others. For example, Normore writes, ‘Because the internal place of a quantity of extension just is that extension itself, it moves with the extension’; “Metaphysics of Extension,” 284. Huggett describes Descartes’s view as one on which ‘space and matter are identified and hence the parts of space are in motion’; “Why the Parts of Absolute Space are Immobile,” 392 [Absolute Space]. See also Woolhouse, below.

⁷⁶ Newton, *Philosophical Writings*, 25.

⁷⁷ Huggett, “Absolute Space,” 394.

⁷⁸ Woolhouse, “Descartes and the nature of body (Principles of Philosophy, 2.4–19),” 32–3.

⁷⁹ Cavendish, *Philosophical Letters: Or, Modest Reflections Upon some Opinions in Natural Philosophy*, 101–2.

⁸⁰ Lennon’s rough summary suggests he holds this assumption: ‘body really moves only if it changes that space [that it occupies], which cannot happen if it is identical to that space’; “Eleatic Descartes,” 29. In the context of emphasizing the importance of his metaphysical argument, Lennon adds, ‘One wonders how a part of space might move’; “Eleatic Descartes,” 38.

⁸¹ “Metaphysics of Extension,” 280–2.

⁸² I owe thanks for useful comments on earlier versions of this article to Tim Crane, John Marenbon, John Schuster, Alice Sowaal, Martin Lenz, Matt Duncombe, Steven Nadler, and assorted anonymous referees for this journal. Andrea Sangiacomo deserves final, especial acknowledgement for innumerable helpful coffees.